



Summary

Contents

A Quarterly Information Bulletin from the Methodology Division

Contents

Forging a Partnership with the University of Wollongong
Methodology Division Participation at the International Statistical Institute Conference
National Data Network
A New and Improved Australian Economic Indicators Publication
Improved Access to ABS Microdata
State Distribution of Net Overseas Migration
Analysing Childcare use, Welfare Participation and Labour Participation of Mothers
Synthetic Income Estimates in Non-Survey Years

Forging a Partnership with the University of Wollongong

FORGING A PARTNERSHIP WITH THE UNIVERSITY OF WOLLONGONG

The need to establish a program of research into new and innovative methods of collecting, analysing and exploiting statistical information has led to the Australian Bureau of Statistics (ABS) partnering with the University of Wollongong (UOW) to establish a Chair in Statistical Methodology.

An agreement formalising the establishment of the new professorial post was signed on 6 December 2004 between the Australian Statistician, Dennis Trewin, from the ABS and UOW Vice-Chancellor, Professor Gerard Sutton.

The new Chair will be located within the Centre for Statistical and Survey Methodology at UOW. Other staff of the Centre include, amongst others, Professor David Steel and Dr Robert Clark. The centre will undertake fundamental research, industry focused research, and contract research projects involving statistical or survey methodology. It will also develop a program of training activities in statistical methodology targeted at ABS staff. Part of the arrangement involves UOW developing a proposal for a professional doctorate in statistics.

This agreement will forge stronger links between the Methodology Division and the university sector and ensure that statistical methodology skills are available more widely around the nation. Statistical methodology is an area of critical importance to the ABS and other providers of statistics. As university courses with small student numbers are increasingly being discontinued or combined with other courses to maintain student numbers, the Methodology Division is finding it harder to get enough graduates with the specialised training required for methodology work.

This initiative is part of an overall strategy to improve skills of our staff, to ensure sound and defensible methodology is used and to encourage innovation. We expect this relationship will utilise a number of activities such as problem solving clinics, commentaries on project report/research papers, attendance at our methodology panel meetings, adviser on Staff technical development, membership on technical subcommittees as well as personal mentoring of a few staff.

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Methodology Division Participation at the International Statistical

Institute Conference

METHODOLOGY DIVISION PARTICIPATION AT THE INTERNATIONAL STATISTICAL INSTITUTE CONFERENCE

The Methodology Division (MD) has taken an active role in the preparation for the upcoming International Statistical Institute (ISI) conference in April 5th to 12th in Sydney, 2005.

The Local Organising Committee consists of Geoff Lee (Chair), Paul Sutcliffe, Anna Poskitt and Craig McLaren. Assistance has been provided by many other MD volunteers. The final program for the ISI session will include over 200 meetings, 1000 talks and over 1800 participants.

Presentations at the ISI session and its associated meetings and short courses will cover all significant areas of statistics. Special theme days, with cutting edge presentations and papers, are being organised for those with interests in finance and statistics, environmental statistics and genomics. Highlights of the session include talks by renowned mathematical biologist Lord Robert May and econometrician and Nobel Laureate, Sir Clive Granger.

A significant number of staff (over 80) from the Australian Bureau of Statistics (ABS) will be attending where 60 of these are staff from the MD. Talks by MD staff will cover a wide range of topics. Particular highlights include Invited Paper Meeting presentations by Philip Bell on using composite estimation to measure the impact of changes to a survey vehicle and Daniel Elazar on Use of Small Area Estimates in the Provision of Disability Services in Australia. There will be talks in Special Topic Contributed Meetings by: Keith Farwell on Significance Editing for a Variety of Survey Situations; Paul Sutcliffe on A General Approach to Editing; Mark Zhang on Trading Day Effect Estimation for Quarterly Time Series and Jon Hall on Measures of Australia's Progress. Other talks from MD participants will cover topics such as: confidentiality, time series issues, survey design, quality, and analysis of analytical output. Several short courses will also be held in conjunction with the ISI session. Craig McLaren and Prof. David Steel (University of Wollongong) are jointly running a short course on Design and Analysis of Repeated Surveys.

This will be the second time that the ISI session has been held in Australia. It was last held in Sydney in 1967. The ABS is the host organiser of the session. We look forward to seeing you at the ISI in Sydney from April 5th to 12th, 2005!

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National Data Network

NATIONAL DATA NETWORK

Over the last 12 months, the Australian Bureau of Statistics (ABS) has led the development of the National Data Network (NDN). The demonstration phase of the NDN will showcase the benefits of using an open source central data catalogue and distributed network across a number of State and Australian Government agencies. The specific outcomes of this project are:

- to identify the feasibility of developing a networked system (utilising open source software) to share data and provide on-line statistical services in the government context;
- to understand the cost to Custodians of implementing and participating in a National Data Network; and
- to understand the issues associated with the sharing of secure information in accordance with the policy of each agency.

The demonstration phase of the network consists of a central hub that communicates with individual "nodes". Each "node" is a system loaded to an agency's web sit to manage the metadata and data that they have exposed. A node provides a local catalogue of an agency's metadata and data sources available through the NDN. The metadata will draw on international schema's and also contain information about the access procedures and protocols attached to each data source. The node software will automatically update the central catalogue about changes to the metadata and data available. The demonstration phase of the network will also promote the availability of web based data services.

The demonstration phase of the network's initial release occurs in April 2005, when the NDN central hub and the ABS node become available to the public. Initially, the ABS proposes to expose basic community profiles and a range of transport data to the network.

A number of agencies will release nodes over the next 9 months. It is anticipated that approximately twelve government agencies will participate in the demonstration phase of the National Data Network.

A number of principles, procedures and protocols are being developed to support the delivery of consistent and accessible data across the network. Some of these principles relate to security, metadata and commitment to the NDN initiative.

The National Data Network Web Site provides an overview of the NDN, including current development news and discussion forums to promote open feedback about the principles and procedures being developed to support the initiative. The National Data Network web site is www.nationaldatanetwork.org.

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A New and Improved Australian Economic Indicators Publication

A NEW AND IMPROVED AUSTRALIAN ECONOMIC INDICATORS PUBLICATION

Methodology Division (MD) produces Australian Economic Indicators (AEI) every month. This publication has the role of a reference document and presents a statistical summary of recent developments in the Australian Economy, including tables, charts, commentaries, short articles and occasional technical notes.

The aim of the AEI is to assist users understand the Australian Economy, inform them of emerging issues and developments in the economy, and assist them in assessing current economic conditions.

The AEI is being reviewed in order to provide a more up to date and useful format to users. A survey is currently being put together for users, previous users and potential users to determine what the advantages of our publication are over others and how it can be improved. Research is also currently underway on other popular publications and how they present their data and analysis, both in Australia and Internationally. These include economic publications by the Reserve Bank of Australia, Treasury, Department of Parliamentary Library, Organisation of Economic Co-operation and Development and Stats Canada, which will all be valuable in creating a successful new AEI.

The layout of AEI is also being reviewed to enable data and analysis to be presented in a more informative and user friendly format. In addition, the format of release of the AEI on the ABS website is also being looked into (we may produce the monthly publication as an HTML document rather than a print publication and PDF file). The AEI publication is expected to undergo substantial improvements in format, economic interpretation and access to the public domain.

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Improved Access to ABS Microdata

IMPROVED ACCESS TO ABS MICRODATA

The Australian Bureau of Statistics (ABS) has further developed its capacity to make more detailed statistical information available to external researchers, while maintaining the confidentiality of data providers. 2004 has seen the introduction of "**specialist**" confidentialised unit record files (CURFs), and the provision of on-site datalab facilities at all ABS offices.

Specialist CURFs consist of microdata that are too sensitive to be made available as part of our existing range of CURF files. Specialist CURFs contain data of a business survey, longitudinal or linked nature; or particularly sensitive household survey data items. Specialist CURFs therefore complement the "**basic**" and "**expanded**" household survey CURFs that can already be accessed via the CD-ROM dissemination program and / or the Remote Access Data Laboratory (RADL).

Furthermore, the ABS has formalised and developed its capacity to provide secure on-site datalab facilities. The ABS Data Laboratory (ASDL) will provide researchers with hands-on access to specialist CURF data in a secure and interactive environment. Unlike the RADL, which is restricted to a batch-mode style of programming, the ASDL will provide infrastructure for clients to complete statistical analyses of confidentialised microdata using SAS, SPSS or STATA software with point-and-click functionality. Future potential also exists for further statistical

software packages to be made available in the ABSDL on a demand basis. The ABSDL may also be used to provide interactive access to expanded CURFs which were previously available on the RADL.

Protection of specialist CURF data is maintained through a number of confidentiality processes and procedures. Spontaneous recognition risk is managed through the application of controlled confidentialisation techniques (eg. data swapping or perturbation of a small amount of data values). List-matching risk is minimised by preventing the specialist CURF from contact with non-ABS data. Specialist CURF data is held within the locked-down ABSDL system and while clients may view and print unit-record information and derived output, they may not remove it from the ABS via hard-copy or electronic means. Rather, the ABS provides a confidentiality clearance service, where all output to be retained by the client is passed to the ABSDL clearance officer who checks it for compliance with ABS confidentiality guidelines, and where appropriate, arranges for its release to the client.

The ABS is committed to further improvements to data access for external researchers and is conducting CURF client research meetings in all State and Territory capital cities during March, April and May 2005. Existing and potential clients with comments and feedback on data access issues are invited to email the CURF Management Unit <curf.management@abs.gov.au> or phone (02) 6252 5731 to register their interest in attending these sessions. The details of all sessions are now available on the ABS website - Services to Universities - Access to CURFs - Whats new?

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State Distribution of Net Overseas Migration

STATE DISTRIBUTION OF NET OVERSEAS MIGRATION

The ABS is currently reviewing the methodology used to determine the Net Overseas Migration (NOM) figures which are used to calculate the Estimated Resident Population (ERP). The preliminary ERP figures (available approximately 6 months after the reference quarter) are used to determine important state funding decisions. However these often differ substantially from the revised figures (available 15 months after the end of each financial year).

Analytical Services Branch is currently working with Statistical Services Branch and the Demography section on a project to develop new methodology to distribute NOM between states. We are looking at developing methodology to improve the revised figures as well as methods to ensure the preliminary figures are more accurate (and so require less revision).

Of particular interest are travellers who category jump. That is, passengers whose initial categories (such as intended state and period of stay) differ from their eventual categories. When a traveller changes from being short term (less than 12 months) to long term they must be included in the ERP. Similarly, when they change from being long term to short term, they must be removed from ERP. This is taken into account through the migration adjustment.

This project is considering methods to more accurately estimate the preliminary migration adjustment, including a complex modelling approach and a simpler approach based on propensities. The visa category (or reason for travel) and country of citizenship as well as the quarter and the year are all being considered as useful explanatory variables.

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Analysing Childcare use, Welfare Participation and Labour Participation of Mothers

ANALYSING CHILDCARE USE, WELFARE PARTICIPATION AND LABOUR PARTICIPATION OF MOTHERS

In conjunction with the Family and Community section in Population Statistics Group, Analysis Branch has commenced a project to understand the reliability and useability of ABS' childcare data, and model childcare use, welfare participation and labour participation of mothers. The first stage of the project is to assess the quality of the

ABS Child Care Survey data. This involves investigations on accuracy, consistency, completeness, duplication, conformity and integrity of the 2002 ABS Childcare survey data. Attention will be given to data on childcare costs, childcare care benefits, type of childcare service used and the employment behaviour of mothers. Data from the survey are to be compared with childcare data from independent sources. Data comparisons will be carried out on various sub populations of interest.

The second stage of the project aims to analyse the structure and determinants of the use of paid childcare; and to what extent paid childcare constitutes a barrier to labour supply from mothers. Thus far, the evidence of the relationship between childcare utilisation, affordability and female labour supply in Australia is inconclusive. Some past studies have demonstrated that there is no evidence of a positive relationship between childcare use and female employment. Further, the impact on employment of mothers with young children due to decreased in childcare affordability was small. On the other hand, other studies gave evidence of women reducing hours or withdrawing from work because of the high cost of care.

We are exploring the use of structural equation modeling techniques to examine the simultaneous relationship of mothers with young children in making choices of using paid childcare, receiving childcare benefits and participating in labour market. In this analysis, we will treat mothers' choice of using paid childcare and welfare dependence as endogeneous decisions and will be resolved simultaneously with the decision on labour participation.

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Synthetic Income Estimates in Non-Survey Years

SYNTHETIC INCOME ESTIMATES IN NON-SURVEY YEARS

The Analytical Services Branch is currently involved in a project investigating methodological possibilities for producing income data at unit record level in years when the Australian Bureau of Statistics (ABS) will not be running a Survey of Income and Housing. The project is divided into two phases. Phase 1 involves exploring and testing possible methods for producing synthetic income microdata using historical data. Conditional on sound methodology being identified in Phase 1, Phase 2 of the project will then proceed to produce synthetic income microdata for non-survey years.

The static ageing techniques of microsimulation models are being explored as a possible method for producing synthetic income microdata. Such ageing techniques allow for the updating of sampling weights and income to more closely reflect target year conditions, using external benchmark data. New sampling weights for each unit record are obtained by adjusting original unit weights in line with movements over time in the characteristics of the populations (such as demographic, labour force status) that the record represents. New income levels for each unit record are obtained by indexing (either inflating or deflating) income from different sources by applying appropriate uprating factors that more closely reflect movements in that component of income in the economy over time (such as changes in wages/salaries, social security payments, consumer price index etc).

Preliminary results from the exploratory study were discussed at our Methodology Advisory Committee in November. Suggestions were made for further refining of the population weights and greater scrutiny over the choice of uprating factors for the income variables.

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About this release

Methodological News